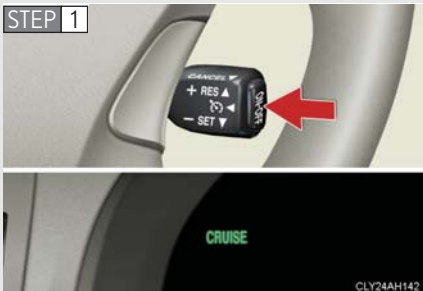
Cruise control*

Use the cruise control to maintain a set speed without depressing the accelerator pedal.

1 Indicator

2 Cruise control switch

Setting the vehicle speed

STEP 1

Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

STEP 2

Accelerate or decelerate the vehicle to the desired speed, and push the lever down to set the speed.

*: If equipped

■ Adjusting the set speed

To change the set speed, operate the lever until the desired set speed is displayed.

1 Increases speed

2 Decreases speed

Fine adjustment: Momentarily move the lever in the desired direction.

Large adjustment: Hold the lever in the desired direction.

The set speed will be increased or decreased as follows:

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated.

Large adjustment: The set speed can be increased or decreased continually until the lever is released.

■ Canceling and resuming the constant speed control

1 Pulling the lever toward you cancels the constant speed control.

The speed setting is also canceled when the brakes are applied.

2 Pushing the lever up resumes the constant speed control.

Resuming is available when the vehicle speed is more than approximately 25 mph (40 km/h).

n **Cruise control can be set when**

l The shift lever is in the "D" or range "4" or higher of "S" has been selected.

l Vehicle speed is above approximately 25 mph (40 km/h).

n **Accelerating**

The vehicle can be accelerated normally. After acceleration, the set speed resumes.

n **Automatic cruise control cancelation**

Cruise control will stop maintaining the vehicle speed in any of the following situations:

l Actual vehicle speed falls more than approximately 10 mph (16 km/h) below the preset vehicle speed.
At this time, the memorized set speed is not retained.

l Actual vehicle speed is below approximately 25 mph (40km/h).

l VSC is activated.

n **If the cruise control indicator light flashes**

Press the "ON-OFF" button once to deactivate the system, and then press the button again to reactivate the system.
If the cruise control speed cannot be set or if the cruise control cancels immediately after being activated, there may be a malfunction in the cruise control system. Have the vehicle inspected by your Lexus dealer.

CAUTION

- **To avoid operating the cruise control by mistake**

  Switch the cruise control off using the "ON-OFF" button when not in use.

- **Situations unsuitable for cruise control**

  Do not use cruise control in any of the following situations.
  Doing so may result in loss of control and could cause an accident resulting in death or serious injury.

  - In heavy traffic
  - On roads with sharp bends
  - On winding roads
  - On slippery roads, such as those covered with rain, ice or snow
  - On steep hills
    Vehicle speed may exceed the set speed when driving down a steep hill.
  - During emergency towing

Dynamic radar cruise control*

Dynamic radar cruise control supplements conventional cruise control with a vehicle-to-vehicle distance control. In the vehicle-to-vehicle distance control mode, the vehicle automatically accelerates or decelerates in order to maintain a set following distance from vehicles ahead.

1 Indicator
2 Display
3 Set speed
4 Cruise control switch
5 Vehicle-to-vehicle distance button

Setting the vehicle speed (vehicle-to-vehicle distance control mode)

Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

*: If equipped

Accelerate or decelerate the vehicle to the desired speed, and push the lever down to set the speed.

Adjusting the set speed

To change the set speed, operate the lever until the desired set speed is displayed.

1 Increases speed

2 Decreases speed

Fine adjustment: Momentarily move the lever in the desired direction.

Large adjustment: Hold the lever in the desired direction.

In the vehicle-to-vehicle distance control mode, the set speed will be increased or decreased as follows:

▶ When the set speed is shown in “MPH”

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated

Large adjustment: By approximately 5 mph (8 km/h) for each 0.75 seconds the lever is held

▶ When the set speed is shown in “km/h”

Fine adjustment: By approximately 0.6 mph (1 km/h) each time the lever is operated

Large adjustment: By approximately 3.1 mph (5 km/h) for each 0.75 seconds the lever is held

In the constant speed control mode (→P. 236), the set speed will be increased or decreased as follows:

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated

Large adjustment: The set speed can be increased or decreased continually until the lever is released.

Changing the vehicle-to-vehicle distance

Pressing the button changes the vehicle-to-vehicle distance as follows:

1 Long

2 Medium

3 Short

The vehicle-to-vehicle distance is set automatically to the long mode when the "POWER" switch is turned to ON mode.

If a vehicle is running ahead of you, the preceding vehicle mark will also be displayed.

n **Canceling and resuming the speed control**

1 Pulling the lever toward you cancels the cruise control.

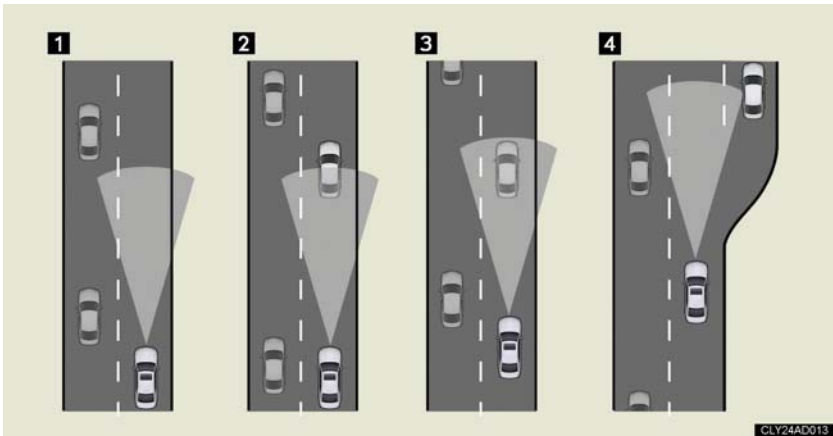
The speed setting is also canceled when the brakes are applied.

2 Pushing the lever up resumes the cruise control and returns vehicle speed to the set speed.

Resuming is available when the vehicle speed is more than approximately 25 mph (40 km/h).

Driving in vehicle-to-vehicle distance control mode

This mode employs a sensor to detect the presence of vehicles up to approximately 400 ft. (120 m) ahead and to judge the distance between your vehicle and those the vehicle ahead of you.

Note that vehicle-to-vehicle distance will close in when traveling on long downhill slopes.

1 Example of constant speed cruising
When there are no vehicles ahead

The vehicle travels at the speed set by the driver. The desired vehicle-to-vehicle distance can also be set by operating the vehicle-to-vehicle distance control.

2 Example of deceleration cruising
When the vehicle ahead is driving slower than the set speed

When a vehicle is detected running ahead of you, the system automatically decelerates your vehicle. When a greater reduction in vehicle speed is necessary, the system applies the brakes. A warning tone warns you when the system cannot decelerate sufficiently to prevent your vehicle from closing in on the vehicle ahead.

3 Example of follow-up cruising
When following a vehicle driving slower than the set speed

The system continues follow-up cruising while adjusting for changes in the speed of the vehicle ahead in order to maintain the vehicle-to-vehicle distance set by the driver.

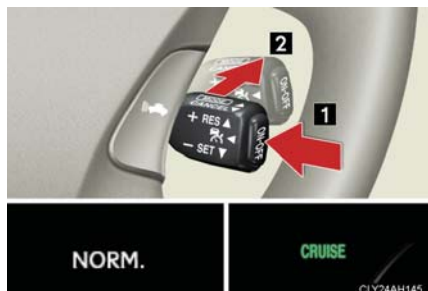
4 Example of acceleration
When there are no longer any vehicles ahead driving slower than the set speed

The system accelerates until the set speed is reached. The system then returns to constant speed cruising.

Approach warning

When your vehicle is too close to a vehicle ahead, and sufficient automatic deceleration via the cruise control is not possible, the display will flash and the buzzer will sound to alert the driver. An example of this would be if another driver cuts in front of you while you are following a vehicle. Apply the brakes to ensure an appropriate vehicle-to-vehicle distance.

Selecting conventional constant speed control mode

Dynamic radar cruise control can be used as conventional cruise control if you select constant speed control mode.

1 Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

Vehicle-to-vehicle distance control mode is always reset when the "POWER" switch is turned to ON mode.

2 Switch to constant speed control mode.
(Push the lever forward and hold for approximately one second.)

Constant speed control mode indicator will come on.

Adjusting the speed setting:
→P. 231

Canceling and resuming the speed setting: →P. 233

Dynamic radar cruise control can be set when

- The shift lever is in the D or range 4 or higher of S has been selected.
- Vehicle speed is above approximately 30 mph (50 km/h).

Switching modes

The mode cannot be switched to constant speed control mode if vehicle-to-vehicle distance control mode has been used. The mode also cannot be switched from constant speed control to vehicle-to-vehicle distance control mode. Turn the system off by pressing the "ON-OFF" button, and turn it on again.

■ Accelerating

The vehicle can accelerate normally. After acceleration, the set speed resumes. However, during vehicle-to-vehicle distance control mode, the vehicle speed may decrease below the set speed in order to maintain the distance to the vehicle ahead.

■ Automatic cancelation of vehicle-to-vehicle distance control

Vehicle-to-vehicle distance control driving is automatically canceled in the following situations:

- Actual vehicle speed falls below approximately 25 mph (40 km/h).
- VSC is activated.
- The sensor cannot operate correctly because it is covered in some way.
- The windshield wipers are operating at high speed.
- The driving mode select switch is set to snow mode.

If vehicle-to-vehicle distance control driving is automatically canceled for any other reason, there may be a malfunction in the system. Contact your Lexus dealer.

■ Automatic cancelation of constant speed control

The cruise control will stop maintaining the vehicle speed in the following situations:

- Actual vehicle speed is more than approximately 10 mph (16 km/h) below the set vehicle speed.
  At this time, the memorized set speed is not retained.
- Actual vehicle speed falls below approximately 25 mph (40 km/h).
- VSC is activated.

■ Vehicle-to-vehicle distance settings

Select a distance from the table below. Note that the distances shown correspond to a vehicle speed of 50 mph (80 km/h). Vehicle-to-vehicle distance increases/decreases in accordance with vehicle speed.

Distance options	Vehicle-to-vehicle distance
Long	Approximately 160 ft. (50 m)
Medium	Approximately 130 ft. (40 m)
Short	Approximately 100 ft. (30 m)

Radar sensor and grille cover

Always keep the sensor and grille cover clean to ensure that the vehicle-to-vehicle distance control operates properly. (Some obstructions, such as snow, ice or plastic objects, cannot be detected by the obstruction sensor.)
Dynamic radar cruise control is canceled if an obstruction is detected.

1 Grille cover

2 Radar sensor

Warning lights, messages and buzzers for dynamic radar cruise control

Warning lights, messages and buzzers are used to indicate a system malfunction or to inform the driver of the need for caution while driving. (→P. 498, 508)

Approach warning

In the following instances, there is a possibility that the warnings will not occur:

- When the speed of the vehicle ahead matches or exceeds your vehicle’s speed
- When the vehicle ahead is traveling at an extremely slow speed
- Immediately after the cruise control speed was set
- At the instant the accelerator is applied

Certification

▶ For vehicles sold in the U.S.A.

FCC ID: HYQDNMWR004

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiofrequency radiation exposure Information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance of 20 cm between the radiator (antenna) and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

▶ For vehicles sold in Canada

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CAUTION

■ **Before using dynamic radar cruise control**

Do not overly rely on vehicle-to-vehicle distance control.
Be aware of the set vehicle speed. If automatic deceleration/acceleration is not appropriate, adjust the vehicle speed, as well as the distance between your vehicle and vehicles ahead by applying the brakes etc.

■ **Cautions regarding the driving assist systems**

Observe the following precautions.
Failure to do so may cause an accident resulting in death or serious injury.

- Assisting the driver to measure following distance
  The dynamic radar cruise control is only intended to help the driver in determining the following distance between the driver's own vehicle and a designated vehicle traveling ahead. It is not a mechanism that allows careless or inattentive driving, and it is not a system that can assist the driver in low-visibility conditions. It is still necessary for driver to pay close attention to the vehicle's surroundings.
- Assisting the driver to judge proper following distance.
  The dynamic radar cruise control determines whether the following distance between the driver's own vehicle and a designated vehicle traveling ahead is appropriate or not. It is not capable of making any other type of judgement. Therefore, it is absolutely necessary for the driver to remain vigilant and to determine whether or not there is a possibility of danger in any given situation.
- Assisting the driver to operate the vehicle
  The dynamic radar cruise control has no capability to prevent or avoid a collision with a vehicle traveling ahead. Therefore, if there is ever any danger, the driver must take immediate and direct control of the vehicle and act appropriately in order to ensure the safety of all involved.

■ **To avoid inadvertent cruise control activation**

Switch the cruise control off using the “ON-OFF” button when not in use.

CAUTION

Situations unsuitable for dynamic radar cruise control

Do not use dynamic radar cruise control in any of the following situations.
Doing so may result in inappropriate speed control and could cause an accident resulting in death or serious injury.

- In heavy traffic
- On roads with sharp bends
- On winding roads
- On slippery roads, such as those covered with rain, ice or snow
- On steep downhills, or where there are sudden changes between sharp up and down gradients
  Vehicle speed may exceed the set speed when driving down a steep hill.
- At entrances to expressways
- When weather conditions are bad enough that they may prevent the sensors from functioning correctly (fog, snow, sandstorm, heavy rain, etc.)
- When the approach warning buzzer can be heard often
- During emergency towing

When the radar sensor may not be correctly detecting the vehicle ahead

Apply the brakes as necessary when any of the following types of vehicles are in front of you.
As the sensor may not be able to correctly detect these types of vehicles, the approach warning (→P. 235) will not be activated, and a fatal or serious accident may result.

- Vehicles that cut in suddenly
- Vehicles traveling at low speeds
- Vehicles that are not moving
- Vehicles with small rear ends (trailers with no load on board etc.)
- Motorcycles traveling in the same lane

CAUTION

Conditions under which the vehicle-to-vehicle distance control may not function correctly

Apply the brakes as necessary in the following conditions as the radar sensor may not be able to correctly detect vehicles ahead, and a fatal or serious accident may result:

- When water or snow thrown up by the surrounding vehicles hinders the functioning of the radar sensor
- When your vehicle is pointing upwards (caused by a heavy load in the trunk etc.)
- When the road curves or when the lanes are narrow
- When steering wheel operation or your position in the lane is unstable
- When the vehicle ahead of you decelerates suddenly

Handling the radar sensor

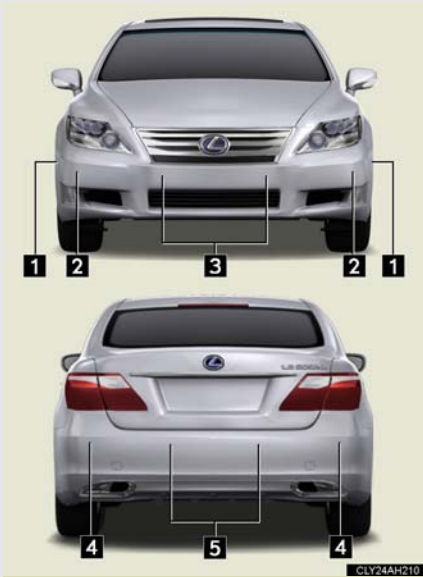
Observe the following to ensure the cruise control system can function effectively.

Otherwise, the system may not function correctly and could result in an accident.

- Keep the sensor and front grille cover clean at all times.
  Clean the sensor and front grille cover with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by your Lexus dealer.
- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille cover or surrounding area.
- Do not modify or paint the sensor and grille cover.
- Do not replace them with non-genuine parts.

Intuitive parking assist

The distance to obstacles measured by the sensors is communicated via the multi-information display and a buzzer when parallel parking or maneuvering into a garage. Always check the surrounding area when using this system.

Types of sensors

1. Front side sensors
2. Front corner sensors
3. Front center sensors
4. Rear corner sensors
5. Rear center sensors

Intuitive parking assist switch

On/off

When on, the indicator light comes on and the buzzer sounds to inform the driver that the system is operational.

Press the button to switch the on/off mode.

Display

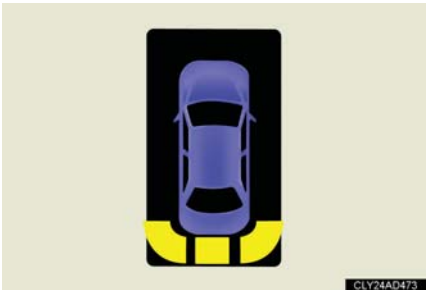
When the sensors detect an obstacle, the graphic is shown on the multi-information display and touch screen according to position and distance to the obstacle.

Multi-information display

1. Front side sensors and front corner sensors operation
2. Front center sensors operation
3. Rear corner sensors operation
4. Rear center sensors operation

Touch screen

When the vehicle is moving forward

The graphic is automatically displayed when an obstacle is detected. The screen can be set so that the graphic is not displayed. (→P. 248)

When the vehicle is moving backward

A simplified image is displayed on the right upper corner of the touch screen when an obstacle is detected.

The distance display and buzzer

When a sensor detects an obstacle, the direction of and the approximate distance to the obstacle are displayed and the buzzer sounds.

▶ Center sensors

Level	1	2	3	4
Display example of front center sensor				
Buzzer	Slow	Medium	Fast	Continuous

▶ Corner sensors and side sensors

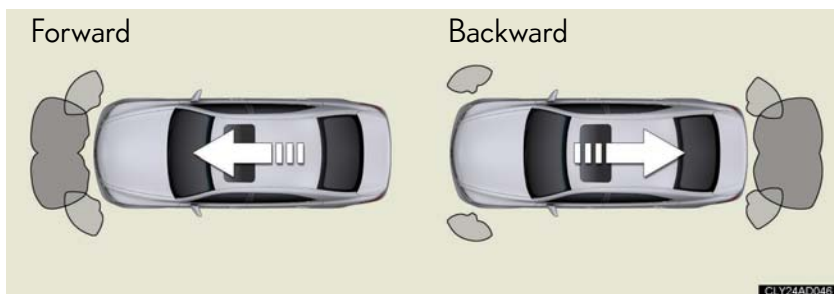
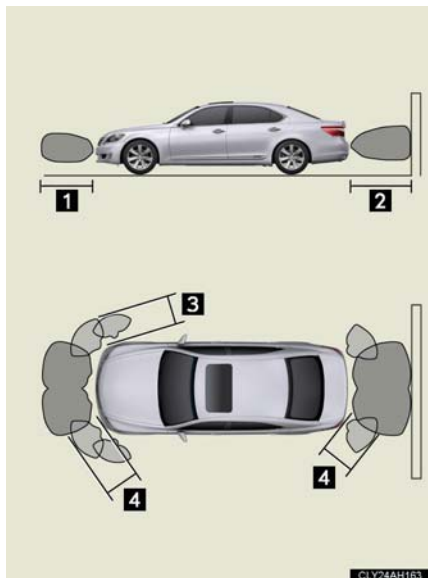
Level	1	2	3	4
Display example of front right sensor	-			
Buzzer	-	Medium	Fast	Continuous

Detection level and approximate distance to an obstacle

Level	1	2	3	4
Front side sensors	-	1.6 to 1.2 ft. (50 to 37.5 cm)	1.2 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Front corner sensors	-	2.0 to 1.2 ft. (60 to 37.5 cm)	1.2 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Front center sensors	3.3 to 1.6 ft. (100 to 50 cm)	1.6 to 1.2 ft. (50 to 37.5 cm)	1.2 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Rear corner sensors	-	2.0 to 1.2 ft. (60 to 37.5 cm)	1.2 to 0.8 ft (37.5 to 25 cm)	0.8 ft. (25 cm) or less
Rear center sensors	4.9 to 2.0 ft. (150 to 60 cm)	2.0 to 1.5 ft. (60 to 45 cm)	1.5 to 1.1 ft. (45 to 35 cm)	1.1 ft. (35 cm) or less

Sensors that operate and detection range

The following diagrams show the sensor detection range. Note that sensors may not be able to detect obstacles that are extremely close to the vehicle.

Sensors that operate

Detection range of the sensors

1. Approx. 3.3 ft. (100 cm)
2. Approx. 4.9 ft. (150 cm)
3. Approx. 1.6 ft. (50 cm)
4. Approx. 2.0 ft. (60 cm)

The diagram shows the detection range of the sensors. Note that the sensors may not be able to detect obstacles that are extremely close to the vehicle.

The range of the sensors may change depending on the shape of the object etc.

Customization of the intuitive parking assist

The buzzer volume, display and buzzer timing and display of the graphic on the screen can be customized.

STEP 1 Press “SETUP” to display the “Setup” screen. (→P. 331)

STEP 2 Touch “Vehicle” on the “Setup” screen.

STEP 3 Touch “LEXUS Park Assist” on the “Vehicle Settings” screen.

1 Alert volume setting

2 Display on/off

3 Alert distance setting

Sensor detection information

- Certain vehicle conditions and the surrounding environment may affect the ability of a sensor to correctly detect an obstacle. Particular instances where this may occur are listed below.
  - There is dirt, snow or ice on a sensor.
  - A sensor is frozen.
  - A sensor is covered in any way.
  - The vehicle is leaning considerably to one side.
  - On an extremely bumpy road, on an incline, on gravel, or on grass
  - The vicinity of the vehicle is noisy due to vehicle horns, motorcycle engines, air brakes of large vehicles, or other loud noises producing ultrasonic waves.
  - There is another vehicle equipped with parking assist sensors in the vicinity.
  - A sensor is coated with a sheet of spray or heavy rain.
  - The vehicle is equipped with a fender pole or radio antenna.
  - Towing eyelets are installed.
  - A bumper or sensor receives a strong impact.
  - The vehicle is approaching a tall or right-angled curb.
  - In harsh sunlight or intense cold weather
  - A non-genuine Lexus suspension (lowered suspension etc.) is installed.

In addition to the examples above, there are instances in which, because of their shapes, signs and other objects may be judged by a sensor to be closer than they are.

- The shape of the obstacle may prevent a sensor from detecting it. Pay particular attention to the following obstacles:
  - Wires, fences, ropes, etc.
  - Cotton, snow and other materials that absorb sound waves
  - Sharply-angled objects
  - Low obstacles
  - Tall obstacles with upper sections projecting outwards in the direction of your vehicle

Touch screen display

If an obstacle is detected while the vehicle is reversing, the warning indicator will appear in the top right of the screen even if the display setting has been set to “Off”.

If the display flashes and a message is displayed

→P. 508

Certification (Canada only)

This ISM device complies with Canadian ICES-001.

CAUTION

Caution when using the intuitive parking assist

Observe the following precautions.
Failure to do so may result in the vehicle being unable to be driven safely and possibly cause an accident.

- Do not use the sensor at speeds in excess of 6 mph (10 km/h).
- Do not attach any accessories within the sensor range.

NOTICE

Notes when washing the vehicle

Do not apply intensive bursts of water or steam to the sensor area.
Doing so may result in the sensor malfunctioning.

LKA (Lane-Keeping Assist)*

While driving on a freeway or motor highway that has lane markings, this system recognizes the lanes using a camera as a sensor to assist the driver with staying in the lane. The LKA system has two functions.

Lane departure warning function

If the system judges that the vehicle may deviate from its lane, it alerts the driver using rapid beeping, indications on the multi-information display, and sensory warning* via the steering wheel.

*: A slight steering torque is applied for a short period of time in the direction of the center of the lane.

Lane keeping assist function

This function will be active when vehicle-to-vehicle distance control mode of the cruise control (→P. 230) is set with vehicle speed above approximately 45 mph (72 km/h) while the lane departure warning function is active. When the lane keeping assist function is active, a slight steering torque will be applied, to help the driver maintain the vehicle in a central position within the lane.

Turning the LKA system on

The lane departure warning function and lane keeping assist function will be activated depending on the recognition condition of lane markings, vehicle speed and the setting of radar cruise control (vehicle-to-vehicle distance control mode).

Press the "LKA" switch to activate the system.

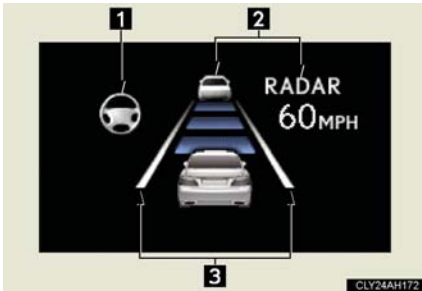
Press the switch again to turn the LKA system off.

*: If equipped

Operating conditions for each function

LKA system	Cruise control (Vehicle-to-vehicle distance control mode)	Lane departure warning function	Lane keeping assist function
		Vehicle speed is between about 30 and 125 mph (48 and 200 km/h)	Vehicle speed is between about 45 and 112 mph (72 and 180 km/h)
On	Off	Available	Not Available
	On While cruising in vehicle-to-vehicle distance control mode with the set vehicle speed approximately 44 mph (71 km/h) or less	Available	Not Available
	On While cruising in vehicle-to-vehicle distance control mode with the set vehicle speed approximately 45 mph (72 km/h) or more	Available	Available

Indications on the multi-information display

While the LKA system is on, the lane line display and steering wheel display are shown on the multi-information display to inform the driver that the LKA system is on.

1 Steering wheel display

When the steering wheel display is shown:
The lane keeping assist function is active.

2 Dynamic radar cruise control display

3 Lane line display

When outlines of the lane lines are shown:
A lane marking is not recognized by the system, or the LKA system functions are temporarily cancelled. (When the lane keeping assist function is cancelled, the signal will beep twice.)

When solid lane lines are shown:
The lane departure warning function is active.

n **Temporary cancellation of the LKA system functions**

If any of the following occurs, the LKA system functions will be temporarily cancelled. The functions will resume after the necessary operating conditions have returned.

l The turn signal lever is operated.

l The steering wheel is turned as far as necessary to cause the vehicle to change lanes.

l The brake pedal is depressed.
The lane keeping assist function will not resume even after the brake pedal is released because depressing the brake pedal also cancels the dynamic radar cruise control.

l The vehicle speed deviates from the operating range of the LKA system functions.

l While the lane lines cannot be recognized while driving.

l The wiper switch is set on low speed or high speed mode or is set on “AUTO” mode with wipers operating at low or high speed.

l The hands-free driving warning activates while the lane keeping assist function is active. (The signal will beep twice.)

l When the lane departure warning function is activated.
Once the lane departure warning function is activated, it will be temporarily canceled and resume a few seconds later.

n **Hands-free driving warning**

If the steering wheel is not operated for about 15 seconds on a straight road or about 5 seconds on a curve, the signal will beep twice, indications on the multi-information display will flash, and the lane keeping assist function will be temporarily cancelled. If you drive the vehicle with your hands lightly touching the steering wheel, it may also be detected as hands-free driving.

n **When the vehicle has been parked under the scorching sun or when the temperature in the cabin is extremely low**

The LKA system functions may not be available for a while after driving of the vehicle has been started. In such cases, turn the LKA system off and turn it on again after normal temperature returns. When the temperature in the cabin decreases or increases, and the temperature around the camera sensor becomes appropriate for its operation, the functions will begin operating. (→P. 257)

CAUTION

■ **Before using the LKA system**

Do not rely on the LKA system to remain within a selected lane. The LKA system is not designed to enable inattentive driving. The steering wheel should be operated by the driver to maintain the vehicle in a suitable position within its lane. Always drive carefully.

■ **Turn the LKA off while driving in any of the following conditions:**

Do not use LKA in any of the following situations. Otherwise, the system may not function correctly and could result in an accident.

- When driving with snow tires, snow chains, a spare tire, or similar equipment.
- When driving with non-standard parts or aftermarket equipment installed. (including modified tires and suspensions, etc.)
- When there are objects or structures along the roadside that might be misinterpreted as lane markers. (such as guardrails, curb, reflector posts, etc.)
- Where there are wheel ruts, icy trademarks, etc. or if snow remains on the road surface.
- When there are shadows on the road running parallel with lane markers, or if a shadow covers the lane markers.
- When there are visible lines on the pavement from road repairs, or if the remains of old lane markers are still visible on the road.
- When driving on slippery roads, such as those covered with rain, ice or snow.
- When driving in a lane other than the driving or passing lanes on a freeway, highway or motorway.
- When driving on a road with lane closures due to maintenance, or when driving in a temporary lane.
- When driving on winding roads or roads that are rough or uneven.

NOTICE

In the following situations, the LKA will not work, or will not perform reliably:

- When lane markers are interrupted or are not present, such as before a tollbooth (tollgate).
- When lane markers are only on one side of the road.
- When driving on a sharp curve.
- When lanes are extremely narrow or extremely wide.
- When the vehicle leans to one side an unusual amount due to a heavy load or improper tire inflation pressure.
- When the following distance between your vehicle and the vehicle ahead is extremely short.
- When the lane markers are broken, “Botts’ dots”, or “Raised pavement marker”.
- When lane markers are obscured or partially obscured by sand, dirt, etc.
- When driving on a particularly bright road surface, such as concrete.
- When driving on a road surface that is bright due to reflected light.
- When driving in a location where the light level changes rapidly, such as the entrance to or exit from a tunnel.
- When sunlight or the headlights of oncoming vehicles are shining directly into the camera lens.
- When driving on roads that are branching or merging.
- When pavement lane markers are difficult to see due to rain, snow, fog, etc.
- When driving on a road surface that is wet due to rain, previous rainfall, standing water, etc.
- When the vehicle experiences strong up-and-down motion such as when driving on an extremely rough road or on a seam in the pavement.
- When headlight brightness is reduced due to dirt on the lenses, or when the headlights are misaligned.
- When driving with a strong crosswind.

NOTICE

■ **Camera sensor**

Observe the following to ensure that the LKA system functions correctly.

- Keep the windshield clean at all times.
  LKA performance may deteriorate due to the presence of raindrops, condensation, ice or snow on the windshield.
- Do not attach a sticker or other items to the windshield near the camera sensor.
- When adjusting the rear view mirror, make sure that it does not block the camera lens.
- When it is cold, using the heater with air blowing to the feet may allow the upper part of the windshield to fog up. This will have a negative effect on the images. In such a case, use the windshield defogger to provide warm, dry air to the windshield.
- Do not place anything on the dashboard.
  The camera sensor may recognize the image reflected on the windshield as lane markers by mistake.
- Do not scratch the camera lens, or let it get dirty.
- Do not change the installation position of the camera sensor or remove it. The direction of the camera sensor is precisely adjusted.
- Do not subject the camera sensor to strong impact or force, and do not disassemble the camera sensor.

Electronically modulated air suspension

The vehicle adjusts the damping of the shock absorbers and maintains vehicle height automatically in response to driving conditions to help provide enhanced driving comfort and vehicle control.

n Vehicle height adjustment

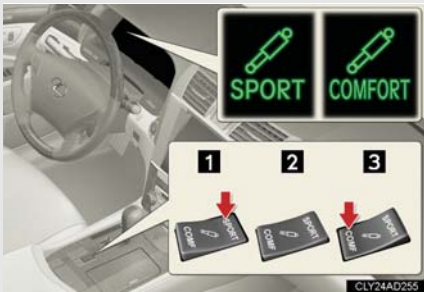
The vehicle's height is maintained at the selected level regardless of the number of occupants and luggage weight.

Turn the "HEIGHT HIGH" switch on.

The indicator light comes on.

Press the switch once more to cancel the high mode.

n Damping mode selection

You can select the damping mode of the shock absorbers.

1 Sport
The indicator light comes on.

2 Normal

3 Comfort
The indicator light comes on.

---

n Operating sound of the air suspension compressor

When the vehicle height is lowered, such as when entering or loading the vehicle, or high mode is selected, the compressor may operate and a whirring sound may be heard. This does not indicate a malfunction.

CAUTION

- **Be sure to stop the hybrid system in the following situations in order to stop operation of the electronically modulated air suspension:**
  - The vehicle is parked on a curb.
  - Any of the wheels is stuck in a ditch.
  - It is necessary to jack up the vehicle.
  - It is necessary to tow the vehicle with part of it lifted.

  If the “POWER” switch remains in ON mode, the vehicle height may change, resulting in accidental damage.

Advanced parking guidance system

The advanced parking guidance system supports the driver during reverse parking by displaying a rear-view image. When in assist mode, the system controls the steering wheel to help the driver reverse the vehicle into a target parking position set on the screen.

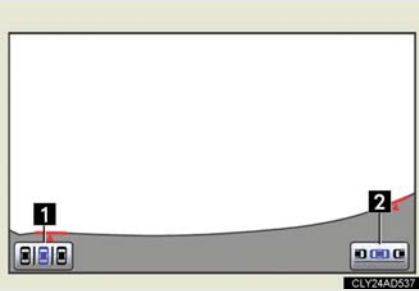
The illustrations of the display shown are examples only and may differ from actual images. When parking in a space on the opposite side to that shown in the examples, be sure to substitute left for right and vice versa when operating the steering wheel.

Advanced parking guidance system will activate when the shift lever is in “R” position.

If you move the lever out of “R” position, the advanced parking guidance system will be deactivated.

As the advanced parking guidance system only assists with parking in a set target parking position, there are times when the system will be unable to render this assistance, depending on factors such as road surface or vehicle condition, or the distance to the set target parking position.

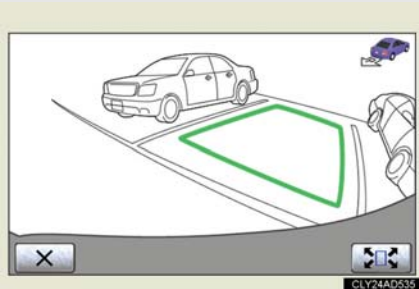
The advanced parking guidance system is not an automatic parking system. It is a system to assist back up parking.

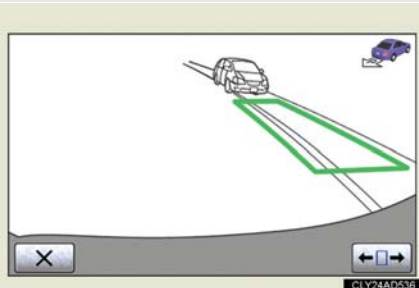
About the screen

1 Parking assist mode button

Touching this button turns parking assist mode on. (→P. 264)

2 Parallel parking assist mode button

Touching this button turns parallel parking assist mode on. (→P. 273)

Perpendicular parking

1 Parking assist mode (→P. 264)

This mode assists the driver during perpendicular parking by automatically controlling the steering wheel to move the vehicle into the target position set on the screen.

Parallel parking

1 Parallel parking assist mode (→P. 273)

This mode assists the driver during parallel parking by automatically controlling the steering wheel to move the vehicle into the target position set on the screen.

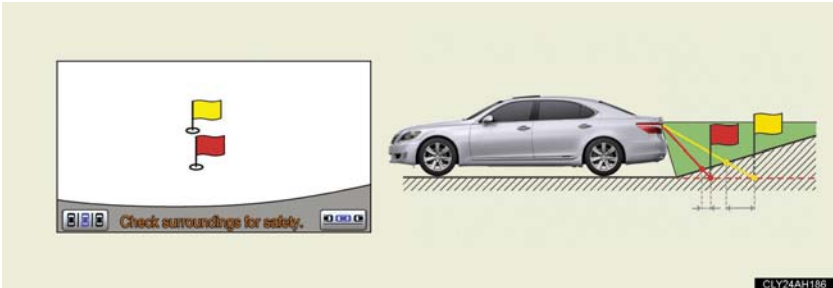
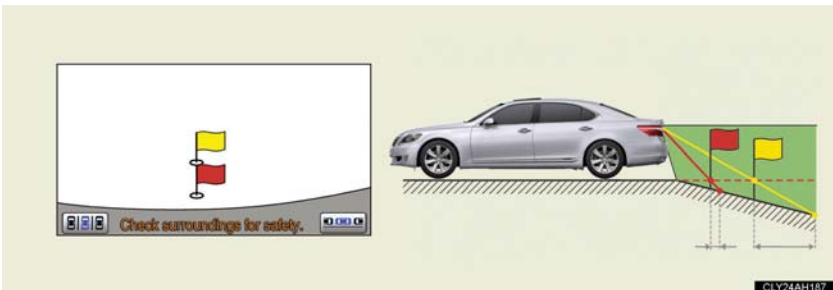
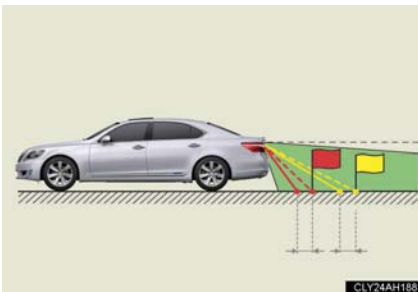
APGS pre-support switch

Use this switch to turn on/off the pre-support function and to switch assist mode between parallel parking assist mode and perpendicular parking assist mode.

Pressing the pre-support switch while assist mode is on, the "POWER" switch is in ON mode and the vehicle is traveling below 9 mph (15 km/h) with the shift position in any position other than "P" or "R", will cause the screen to change in the following order:

Pre-support function OFF → Parallel parking assist mode pre-support screen → Perpendicular parking assist mode pre-support screen → Pre-support function OFF

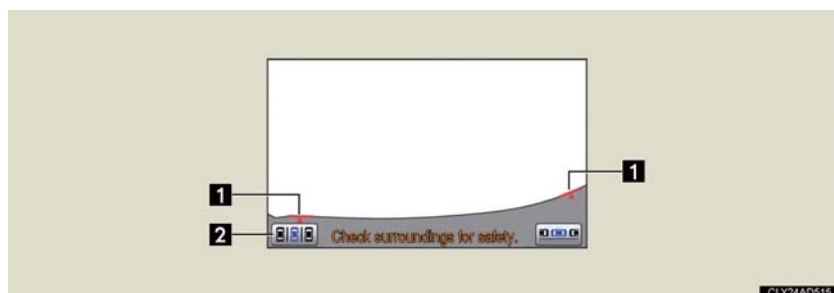
If the pre-support function cannot be used, two beeps will sound (the beeps will not sound if the shift lever is in the "R" position).

Driving precautions

When the grade behind the vehicle slopes up sharply, objects appear to be farther away than they actually are.

When the grade behind the vehicle slopes down sharply, objects appear to be closer than they actually are.

When any part of the vehicle sags due to the number of passengers or the distribution of the load, there is a margin of error between the set target parking position on the screen, and the actual distance/course on the road.

Parking assist mode (Perpendicular parking)

Screen description

Parking assist mode assists the driver with perpendicular parking by automatically controlling the steering wheel when backing up, in order to park in the target position set on the screen.

If a message is displayed while maneuvering (→P. 282)

1. Camera orientation confirmation lines

   If the edge of the bumper displayed on the screen does not match the camera orientation confirmation lines, the camera may not be aligned correctly. Have the vehicle checked by your Lexus dealer.

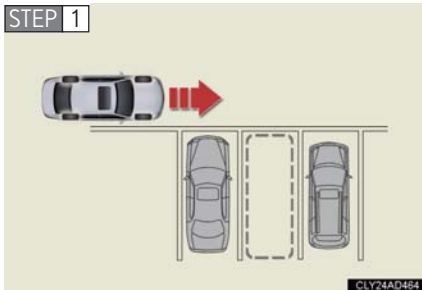
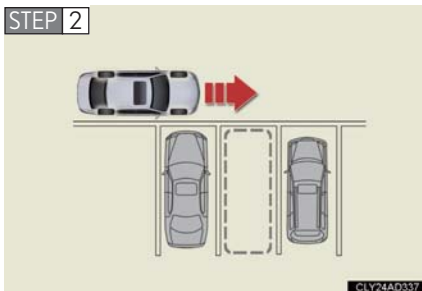
2. Parking assist mode button

n Parking operation

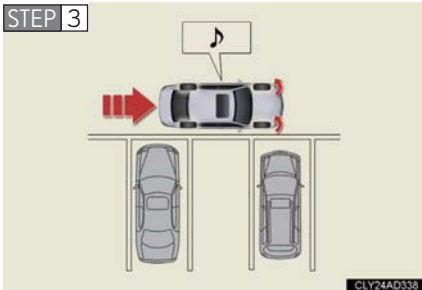
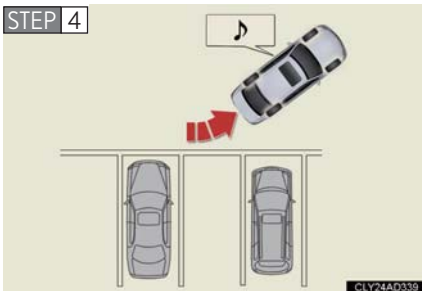
l Pre-support function

Pre-support is useful for parking perpendicular to another vehicle. This function detects the empty parking space beyond the parked vehicle and then guides the driver to the correct starting position for reversing. Chimes are used to inform the driver when it is time to turn the steering wheel and when it is time to start reversing.

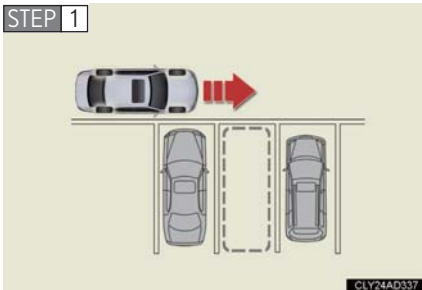
l Before backing up

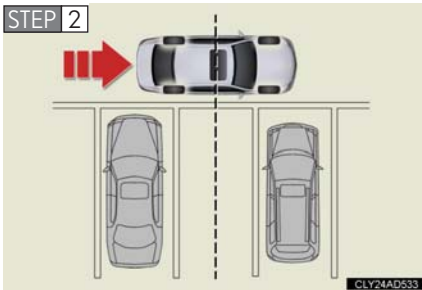
▶ When the pre-support function is in use

With the vehicle stopped or driving at 9 mph (15 km/h) or less, push the pre-support switch twice when your vehicle is positioned slightly before the target parking space. (→P. 262) Check that the screen changes.

Move your vehicle slowly to a position perpendicular to and as close as possible to the target parking space.

Drive slowly enough to be able to turn the steering wheel immediately after the chime sounds.

To discontinue the guidance, push the pre-support switch once to turn the pre-support function off. (→P. 262)

A chime will sound once when the center of the target parking space is visible right beside you. After this chime has sounded, turn the steering wheel about half a turn or more while driving forward.

When the chime sounds twice, stop your vehicle and straighten the steering wheel.

To enter the target parking space more accurately, position your vehicle with a larger heading angle.

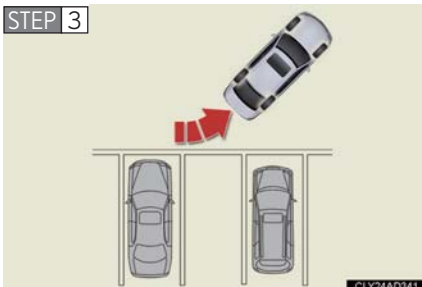
▶ When the pre-support function is not in use

Move your vehicle slowly to a position perpendicular to the parking space, and as close as possible to the parking space.

Positioning the vehicle perpendicular to the parking space allows the angle of the parking position to be identified easily.

Move your vehicle to a position where you can see the center of the parking space right besides you.

To facilitate the setting of the target parking position, the front side sensors detect the vehicles parked at the left and right of the parking space and identify the target parking position.

It is possible to identify the target parking position even if there is only a vehicle parked on one side of the parking space.

If no vehicle or small vehicles are parked on both sides of the desired parking space, stop with the steering wheel straight.

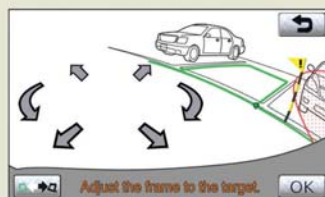
- By stopping the vehicle here, you can mostly identify the parking location, making it easier to set the target parking position.
- Make sure the steering wheel is straight when you stop. If not, the parking location cannot be identified.
- If you do not stop in front of the parking space, the system will refer to the angle of the vehicle relative to the target parking space, and display the target parking position (green or red frame) in the position used last time the parking assist mode was activated.

Position your vehicle so that you can enter the parking space, then stop the vehicle with the steering wheel straight.

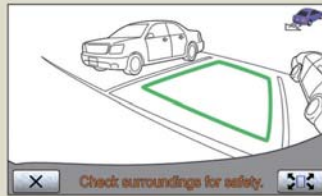
To enter the target parking space more accurately, position your vehicle with a larger heading angle.

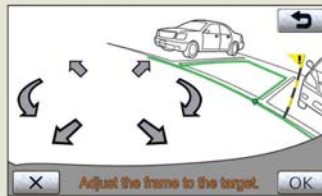
■ While backing up

STEP 1 Place the shift lever in “R” position.

Touch [icon] on the screen (only when the pre-support function is not in use).

STEP 2

Use the arrow to align the green frame with the desired parking space, then touch “OK”.

- You can also move the green frame by touching the screen (area other than the arrow).
- There are tricks to align the green frame. (→P. 270)
- Areas in which you are unable to park are displayed in red.
- If the frame is displayed in red, you cannot use the parking assist mode to park in that location. (→P. 287)
- When the green frame is displayed, if you begin backing up without touching “OK”, the message “Parking position has not been set.” appears. If you continue to back up, you will hear a warning tone and the system will be disabled.
- If the frame is red, there will be no guidance even if you begin backing up.
- If the orientation of the frame is opposite to that of the target parking space, touch [icon].
- There may be times when, due to image distortion, the green frame does not match the parking space lines on the road surface. In this case, attempt an approximate match in an area where the warning flag does not overlap with any parked vehicles or obstacles.
- You may adjust the target parking position even after starting the parking assist mode.

Position yourself as you would when backing up normally, and rest your hands on the steering wheel without applying any pressure. Check your surroundings and behind the vehicle for safety, and slowly back up, using the brake pedal to control the vehicle's speed.

If you touch “X”, assistance is canceled.

You can change the target parking position by touching . If you are backing up, or have already moved close to the target parking position, will turn gray, and you will be unable to change the target.

Touch the arrows to move the target parking position, and then touch “OK”.

Once the vehicle is mostly within the target parking position, voice guidance will inform you to finish the assist mode.

For safety, voice guidance is given slightly before the target parking position. Furthermore, at that point system control will finish, so grip the steering wheel firmly, and finish parking in the desired position, using the brake to control the vehicle's speed.

Check in front and behind the vehicle visually and check with the mirrors while backing up.

■ Tips for setting the target parking position

Useful information for setting the target parking position (green frame)

● The display position of the green frame

The system decides the initial positioning of the green frame by the position of the parking space detected by the front side sensors or the position of the vehicle when it stops, and by detecting the white lines of the parking space in the camera image to identify the parking space location.

The front side sensors identify the parking space location and the white lines near that location are detected.

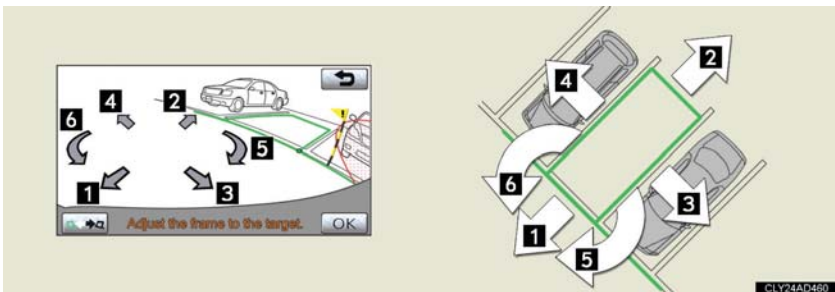
The front side sensors cannot identify the parking space location, or the parking space location maybe misaligned in the following situations.

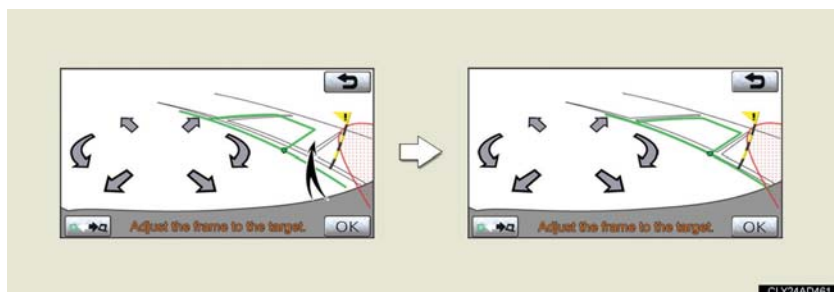
- A vehicle is parked at the back of the parking space or the sensors cannot detect a parked vehicle due to vehicle shape etc.
- The sensors cannot detect a pole or wall beside the parking space.
- The sensors detect a pedestrian or object near the parking space.

If the point at which you stop is correctly identified, the green frame will display the parking space accurately. If the white lines of the parking space have not been correctly identified, the green frame will not match the parking space even if you stop in the correct location. In this case, adjust the point at which you stop as needed.

1 Aligning the green frame

There are two ways to align the green frame with the parking space, either using the arrows on the screen, or by touching the screen at points other than the arrows.

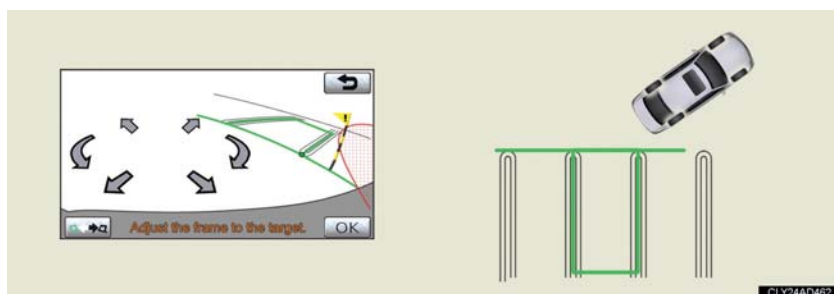
▶ Using the arrows on the screen:

By touching the arrows displayed on the screen, you can move the green frame.

▶ Directly touching the target point:

Touch the front edge of the place you wish to move.

By touching the point you wish to move the frame to, you can move the green frame.

If you touch the following areas, the green frame will not move:

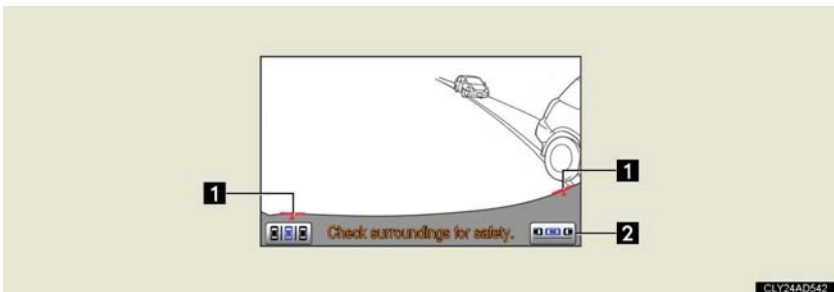
- The area surrounding the arrows.
- The area near the lower button on the screen.
- Areas too far away to park in the range of 31.2 ft. (9.5 m) or more behind, and/or either left or right from the current position.

■ If the parking space and the green frame do not match

If the lines of the parking space are wider than the green frame, position the frame so that the difference between the frame and the parking space lines is equal on both sides.

Parallel parking assist mode

■ Screen description

Parallel parking assist mode assists the driver with parallel parking by automatically controlling the steering wheel when backing up, in order to park in the target position set on the screen.

If a message is displayed while maneuvering (→P. 282)

1 Camera orientation confirmation lines

If the edge of the bumper displayed on the screen does not match the camera orientation confirmation lines, the camera may not be aligned correctly. Have the vehicle checked by your Lexus dealer.

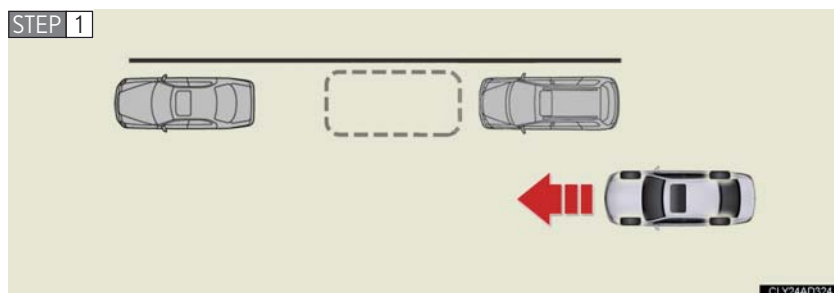
2 Parallel parking assist mode button

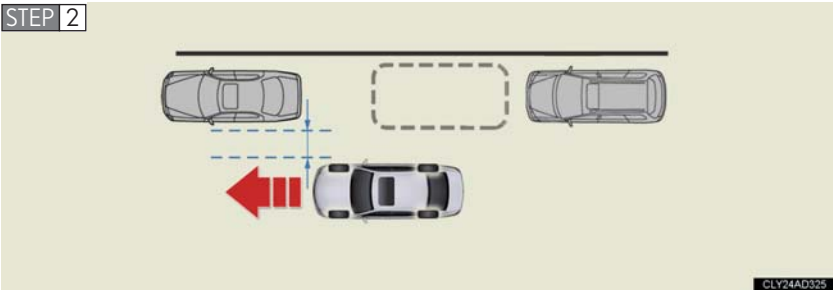
Parking operation

- Pre-support function

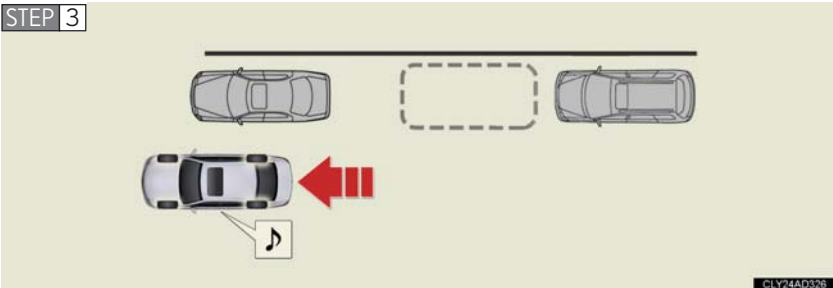
Pre-support is useful for parking between two vehicles that are parked along the shoulder of the road. This function detects the empty parking space between the parked vehicles and then guides the driver to the correct starting position for reversing. Chimes are used to inform the driver when it is time to start reversing.

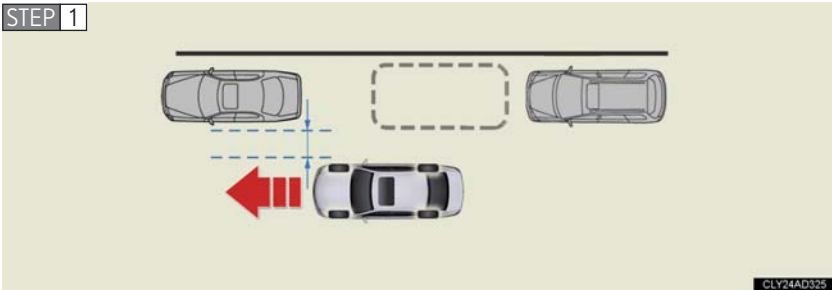
- Before backing up

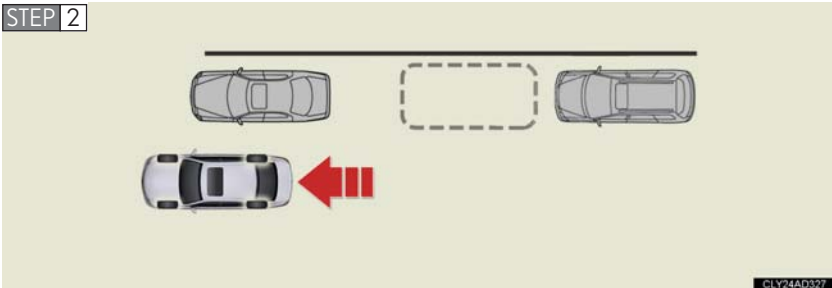
▶ When the pre-support function is in use

With the vehicle stopped or driving at 9 mph (15 km/h) or less, push the pre-support switch once when your vehicle is positioned slightly before the target parking space. (→P. 262) Check that the screen changes.

STEP 2

Move your vehicle slowly alongside the vehicle parked in front of the target parking space. Your vehicle should move parallel to the road or shoulder and be approximately 3 ft. (1 m) away from the side of the parked vehicle.

To discontinue the guidance, push the pre-support switch twice to turn the pre-support function off. (→P. 262)

STEP 3

A chime will sound twice when the front edge of the vehicle parked in front of the target parking space is visible right beside you. When this chime sounds twice, stop your vehicle.

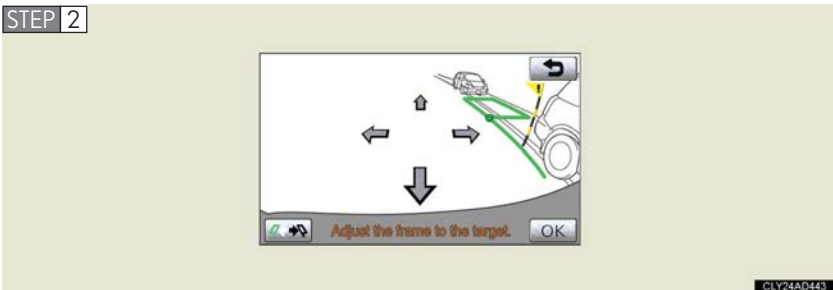
▶ When the pre-support function is not in use

Move your vehicle slowly to a position parallel to the road or shoulder approximately 3 ft. (1 m) away from parked vehicles.

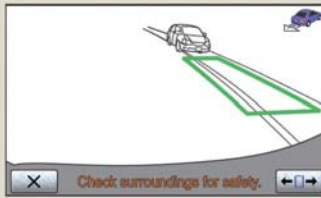
To facilitate the setting of the target parking position, the front side sensors detect the vehicles parked in front of and behind the parking space and identify the target parking position.

Stop your vehicle in a position where you can see the front edge of the leading parked vehicle right beside you, with the steering wheel straight.

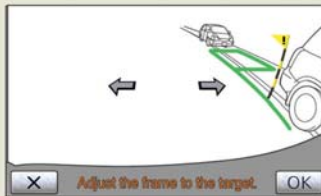
If there is no leading parked vehicle, the system will display the target parking position (green or red frame) in the position used last time the parallel parking assist mode was activated.

■ While backing up

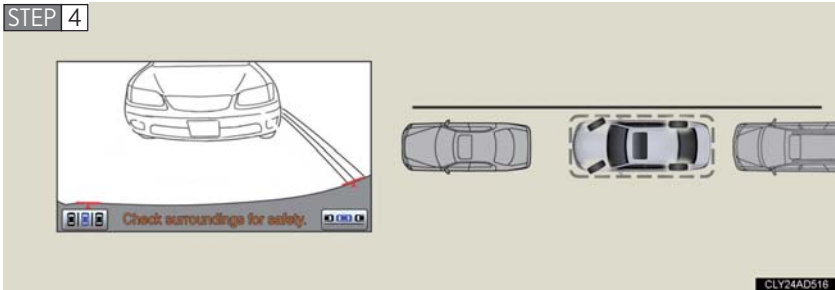
STEP 1 Place the shift lever in the "R" position.
Touch [icon] on the screen (only when the pre-support function is not in use).

STEP 2

Use the arrow to align the green frame with your target parking space, and touch "OK".

- You can also move the green frame by touching the screen (area other than the arrows).
- There are tricks to align the green frame. (→P. 279)
- If the frame is displayed in red, you cannot use the parallel parking assist mode to park in that location. (→P. 287)
- When the green frame is displayed, if you begin backing up without touching "OK", the message "Parking position has not been set." appears. If you continue to back up, you will hear a warning tone and the system will be disabled.
- If the frame is red, there will be no guidance even if you begin backing up.
- If the orientation of the frame is opposite to that of the target parking space, touch [icon].
- There may be times when, due to image distortion, the green frame does not match the parking space lines on the road surface. In this case, use the warning flag and extended green line to set the target parking position.
- You may adjust the target parking position even after starting the parallel parking assist mode.

Position yourself as you would when backing up normally, and rest your hands on the steering wheel without applying any pressure. Check your surroundings and behind the vehicle for safety, and slowly back up, using the brake pedal to control the vehicle's speed.

If you touch “X”, assistance is canceled.

You can change the target parking position by touching . If you are backing up, or have already moved close to the target parking position, will turn gray, and you will be unable to change the target.

Touch the arrows to move the target parking position, and then touch “OK”.

You can only move the target parking position left or right, and the warning flag will not move even if you adjust the target parking position.

STEP 4

Once the vehicle is mostly within the target parking position, voice guidance will inform you to finish the assist mode.

For safety, voice guidance is given slightly before the target parking position. Furthermore, at that point system control will finish, so grip the steering wheel firmly, and finish parking in the desired position, using the brake to control the vehicle's speed.

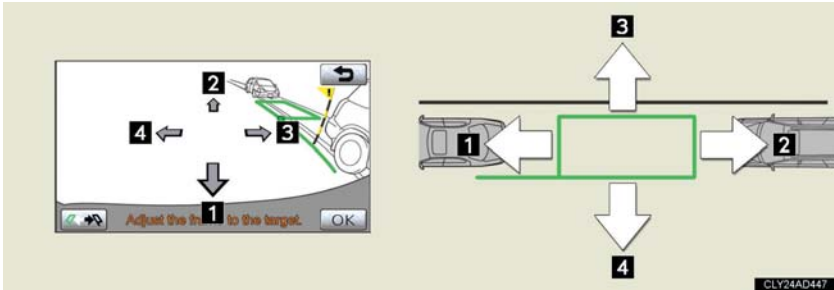
Check in front and behind the vehicle visually and check with the mirrors while backing up.

n Tips for setting the target parking position

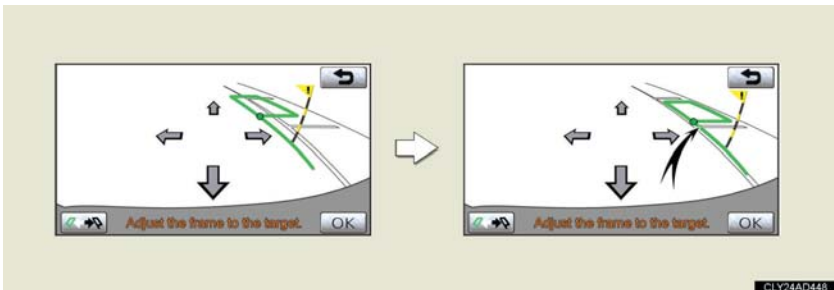
Useful information for setting the target parking position (green frame)

l Aligning the green frame

There are two ways to align the green frame with the parking space, either using the arrows on the screen, or by touching the screen at points other than the arrows.

▶ Using the arrows on the screen:

By touching the arrows displayed on the screen, you can move the green frame.

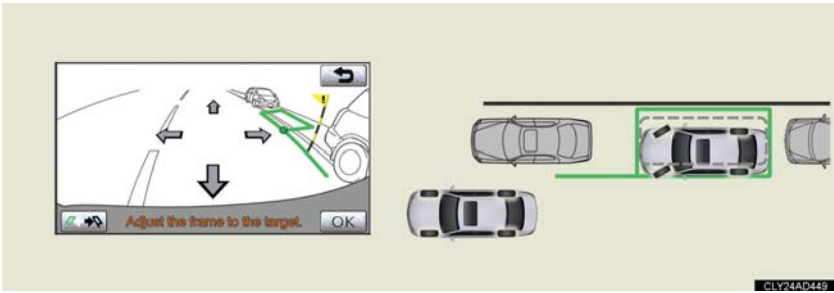
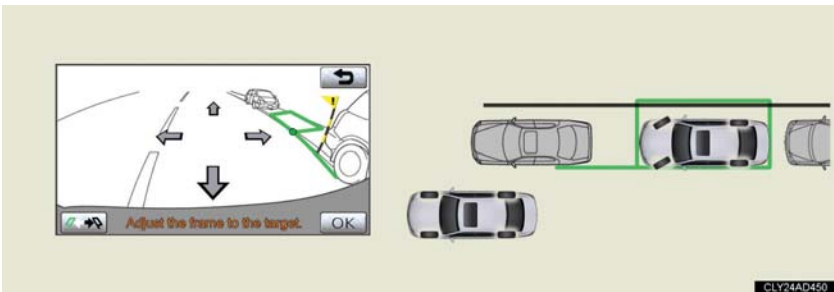
Adjusting the left-right alignment first will make subsequent alignment easier.

▶ Directly touching the target point:

By touching the point you wish to move the frame to, you can move the green frame.

Touch the front edge of the place you wish to move.

If you touch the following areas, the green frame will not move:

- The area surrounding the arrows.
- The area near the lower button on the screen.
- Areas too far away to park in the range of 34.4 ft. (10.5 m) or more behind the current position, and/or 16.4 ft. (5.0 m) or more either left or right from the current position.

1 If there is a slope in the road

The assisted parking position will move left or right of the set target parking position.

In this case, if you align the warning flag with the rear of the forward parked vehicle, and the extended green line with the lower edge of the parked vehicle's rear wheel when setting the target parking position, the left side of your vehicle will be roughly in line with the left side of the front parked vehicle once assisted parking is complete. If you are parallel parking on the opposite side of the road, left and right will be reversed.

What to do when this sort of message is displayed

Message	Cause	What to do
! Parking position cannot be set.	Not in an area where system use is possible.	Change the vehicle's position, referring to the help function.
! Check APGS. Have your vehicle checked by a dealer.	There is a malfunction in the system.	Have your vehicle checked by your Lexus dealer.
! Use on flat surface.	• The vehicle has rolled forward on a sloped road. • The vehicle does not move even if you take your foot off the brake pedal. • You have depressed the accelerator pedal during the assist mode.	Do not attempt to use the system in those sorts of conditions. Use the system for flat parking spaces.
! System cannot guide under current conditions.	If the message is displayed only when the system is operating, it is likely that the tires are worn, or tire inflation pressure is low.	Check tires for wear and pressure.
	If the message is displayed constantly, there is most likely a malfunction.	Turn the “POWER” switch to OFF, then to ON mode. If the message is still displayed, have the vehicle checked by your Lexus dealer.
	The vehicle has skidded or the tires have been locked.	Do not attempt to use the system on a slippery road such as snowy road.

Message	Cause	What to do
! APGS not available now.	The system has temporarily overheated.	Turn the “POWER” switch to OFF, then to ON mode. Wait a few minutes before use.
	There is a malfunction in the voice guidance system.	Have your vehicle checked by your Lexus dealer.
	The hybrid system has not been started.	Turn the “POWER” switch to ON mode and start the hybrid system. If the message is still displayed, have the vehicle checked by your Lexus dealer.
! Release parking brake.	The parking brake has been applied.	Release the parking brake.
! Too much force applied to the steering wheel.	You are exerting too much pressure on the steering wheel.	Loosen your grip on the steering wheel.
Steering position is not straight. Turn the steering wheel to LEFT (or RIGHT).	The steering wheel and tires are not straight.	Turn the steering wheel until tires are straight.

Message	Cause	What to do
Steer to left (or right) until the frame becomes green.	It is possible to begin to park if you turn the steering wheel in the direction indicated.	Turn the steering wheel in the direction indicated until the frame turns green (the message “Too much force applied to the steering wheel.” is displayed). Turn the wheel slightly more than necessary to overcome tire resistance. Once you have turned the steering wheel, you can no longer change the target parking position. Be sure to align the frame before turning the steering wheel.
! Parking position has not been set.	You have begun to back up without touching “OK”.	Stop the vehicle and touch “OK”.
! Speed is too fast.	The speed at which you are backing up is too fast.	Using the brake pedal, back up at a speed that does not cause the warning chime to sound. The system will be disabled if you back up too quickly.
! Guidance canceled by user operation.	You have turned the steering wheel during the assist mode.	The system has been disabled. You will need to restart from the beginning.
! Accelerator pedal has been depressed.	You have depressed the accelerator pedal when setting the target parking position.	Do not depress the accelerator pedal.

Message	Cause	What to do
! Guidance unavailable.	Some sort of malfunction has occurred within the system.	Have your vehicle checked by your Lexus dealer.
! System not ready.	-	Take your vehicle to your Lexus dealer.
! Depress the brake pedal.	“OK” is touched while the brake hold system is on.	Depress the brake pedal and touch “OK”.
! Clean Park Sonar.	The sensors may be affected by extreme cold or covered by foreign matter.	Rinse with water and wipe with a soft cloth. Wash with a mild cleanser and rinse if necessary. If the message is still displayed, have your vehicle checked by your Lexus dealer.

n Message and voice guidance

In the parking assist function, voice guidance accompanies the following messages displayed during parking position setting and steering wheel control. (Voice guidance may not be given depending on the reason the message was displayed.)

Message	Voice Guidance (Warning tone)	
	During setting	During steering wheel control
! Check APGS. Have your vehicle checked by a dealer.	(One chime)	(Two beeps) The guidance has been canceled.
! System cannot assist under current conditions.	-	(Two beeps) The guidance has been canceled.
! APGS not available now.	(One chime)	(Two beeps) The guidance has been canceled.
! Release parking brake.	(One chime)	(Two beeps) The guidance has been canceled.
! Parking position has not been set.	(One chime)	-
! Speed is too fast.	-	(Several beeps and then two beeps) The guidance has been canceled.
! Guidance canceled by user operation.	-	(Two beeps) The guidance has been canceled.

For the adjustment of the volume, refer to the “Navigation System Owner’s Manual”.

n When a red frame is displayed in the parking assist function

If the frame turns red and the message “Adjust the frame to the target.” is displayed while setting the target parking position, you cannot use the parking assist function.

In this situation, move the target parking position, or move the position of the vehicle.

The frame may be displayed in red, depending on the location and angle of the vehicle when “R” position is selected.

Furthermore, even if the frame is displayed in green, if you move the frame to a location unsuitable for parking using the parking assist function, the frame will change to red.

l Help function

If you touch “OK”, the reason the frame is displayed in red will be displayed. Move the vehicle appropriately, referring to the screen.

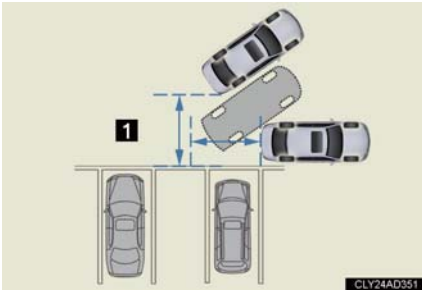
STEP 1 Touch “OK”.

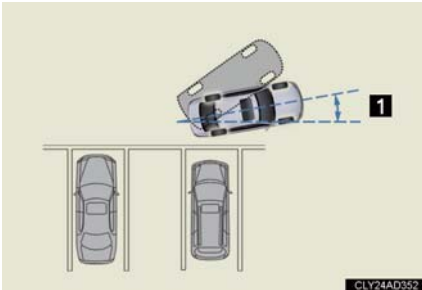
STEP 2 Move the vehicle in accordance with the message displayed.

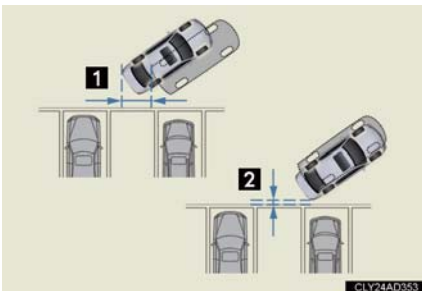
See the following items for information on the messages displayed.If you move the frame to a position acceptable to the assist mode, a chime will sound.

STEP 3 If you have moved the vehicle forwards, place the shift lever in “R” position.

STEP 4 Check that the frame is green, and if that position is acceptable, touch “OK”.

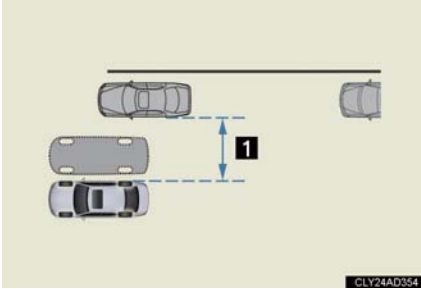
l Displayed message and vehicle position for parking assist mode

1 Too far

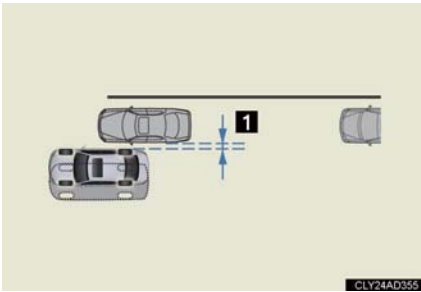
If the vehicle is too far from the parking space, the message “Start from a position nearer to the target parking area.” will be displayed.

1 Angle too small

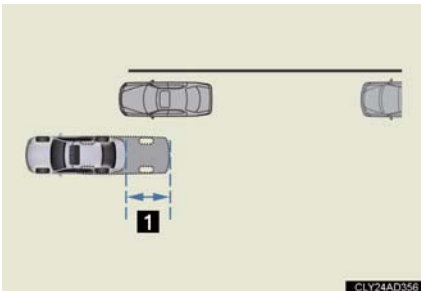
If the orientation of the vehicle is incorrect, the message “Start with larger vehicle heading angle.” will be displayed.

1 Near the front of the parking space

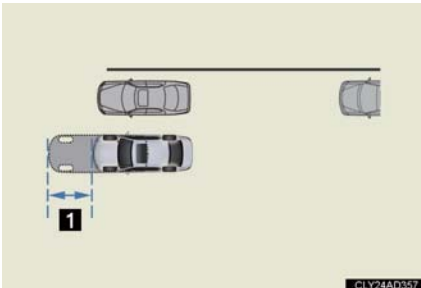
2 Too close

If the vehicle is near the front of the parking space, or too close, the message “Start from a position farther from the target parking area.” will be displayed.

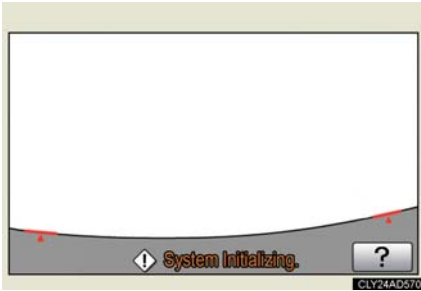
l Displayed message and vehicle position for parallel parking assist mode

1 Too far

If the vehicle is too far from other parked vehicles, the message "Start from a position near to adjacent vehicle." will be displayed.

1 Too close

If the vehicle is too close to other parked vehicles, the message "Start from a position farther from adjacent vehicle." will be displayed.

1 Too far forward

If the vehicle is too far forward, the message "Start after moving slightly backward." will be displayed.

1 Too far back

If the vehicle is too far back, the message "Start after moving slightly forward." will be displayed.

Initializing the system

Make sure to initialize the system in the following situations.

l The 12-volt battery is disconnected and reconnected.

l The system initialization in progress screen is displayed when the shift lever is moved to "R" position (due to low battery etc.).

The help screen appears when "?" is touched. Make a correction using the following method in accordance with the display.

When the vehicle is stopped, turn the steering wheel all the way to the left, then all the way to the right. (It does not matter in which direction — right or left — you turn first.)

When the screen returns to the original display, correction is complete.

If the above screen remains, have the vehicle inspected at your Lexus dealer.

n **Disabling the system**

Even if the shift lever is in “R” position, if you push any of the switches around the screen, such as “SETUP” or “INFO/PHONE”, the screen will switch to that mode.

When in the parking assist mode or parallel parking assist mode, in the following case the voice guidance will say “The guidance has been canceled.”, a message will be displayed, and the system will be disabled. (→P. 282)

After the following operations:

- Moving the steering wheel
- Using the accelerator
- Moving the shift lever out of “R” position
- Applying the parking brake
- Switching the screen display

In the following situations:

- If the vehicle slips forward or stops after taking your foot off the brake pedal
- If the backing speed is too fast
- If normal assistance cannot be rendered due to worn tires or low tire inflation pressure
- If the target parking position has not been confirmed on the target parking position setting screen before backing up
- Any warnings displayed on the screen are not acknowledged before backing up
- If there is a system malfunction
- If the system temperature protection function operates
- If a hands-free phone call is received

If the system is disabled while backing up, grip the steering wheel firmly and depress the brake pedal to bring the vehicle to a halt. The system has been completely disabled, so you may either start again from the beginning, or if you wish to finish parking manually, be sure to operate the steering wheel as you would normally.

■ Notes for the pre-support function

- If the detected parking space is too small, guidance will not start.
- To allow the pre-support system to activate accurately, move the vehicle as slowly as possible (at a speed that will allow the vehicle to stopped suddenly).
- The function cannot be used if the shift position is in “P” or “R” position, or if the vehicle speed is greater than 9 mph (15 km/h).
- In order to identify parking spaces and detect parked vehicle using the sensors on both sides of the front bumper, guidance cannot be given if a space is not detected.
- Parking space guidance and searching continues until the vehicle speed is greater than 9 mph (15 km/h) or until the function is turned off by pushing the pre-support switch.
- Perpendicular parking: The pre-support function can be only used for perpendicular parking when a vehicle is parked beside the target parking space on the side closest to your vehicle as it approaches.
  Parallel parking: The pre-support function can be only used for parallel parking when vehicles are parked both in front of and behind the target parking space.

■ Detecting white lines in parking assist mode (perpendicular parking)

If there are no vehicles parked on either side of the target parking space when your vehicle stops, the approximate parking space location is identified, and the white lines in that location are detected. For this reason, stopping in front of the parking space will make the detection of target parking space's white lines easier.

Successful detection of the parking space's white lines may not be possible, depending on the shape of the line.

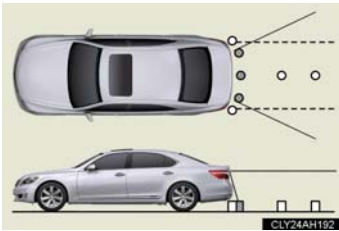
In the following circumstances, detection of the parking space lines on the road surface may not be possible:

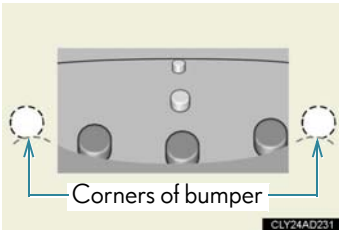
- The lines are faded or dirty, making them unclear.
- The road surface is of a light color which does not contrast well with the white lines.
- The parking space lines are a color other than white (yellow etc.).
- The area is dark, for example at night or in a covered parking lot.
- During or after rain, when the road surface is wet and reflects light, or puddles have formed.
- The sun is shining directly on the camera, for example early morning or late afternoon.
- The parking space is covered with snow or de-icing agent.
- There are markings or maintenance marks on the road surface.

- The color or brightness of the road surface is not uniform.
- Hot or cold water has splashed on the camera, and the lens is fogged.
- There are dirt or water droplets on the lens.

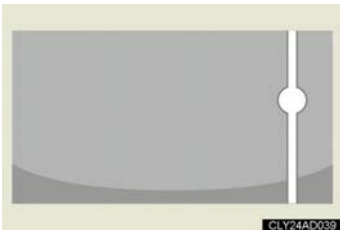
Intuitive parking assist

When the Intuitive parking assist are turned on and an obstacle is detected in front of or behind your vehicle, a warning appears on the top right of the screen. (→P. 243)

Area displayed on screen

The area covered by the camera is limited. Objects which are close to either corner of the bumper or under the bumper cannot be seen on the screen.

The area displayed on the screen may vary according to vehicle orientation or road conditions.

Advanced parking guidance system camera

In the following cases, it may become difficult to see the images on the screen, even when the system is functioning correctly:

- The vehicle is in a dark area, such as at night.
- The temperature near the lens is extremely high or low.
- Water droplets are on the camera lens or humidity is high, such as when it rains.
- Foreign matter, such as snow or mud, adheres to the camera lens.
- The camera has scratches or dirt on it.
- The sun or headlights are shining directly into the camera lens.

If a bright light, such as sunlight reflected off the vehicle body, is picked up by the camera, a smear effect* characteristic to the camera may occur.

*: Smear effect — A phenomenon that occurs when a bright light is picked up by the camera; when transmitted by the camera, the light source appears to have a vertical streak above and below it.

If you install the antenna of a wireless device close to the camera, the screen image may be affected by the electromagnetic waves, and the system may not function correctly. Install an antenna away from the camera.

The method for adjusting the picture quality of the advanced parking guidance system is the same as that for the screen.

CAUTION

■ **When using the system**

- Be sure to check that the vehicle can actually park in the target space before beginning operation.
- Depending on the circumstances of the vehicle (number of passengers, amount of luggage, etc.), the position of the green frame displayed on the screen may change. Be sure to check visually behind and all around the vehicle before proceeding.
- Never depend on the system entirely when backing up. Always make sure your intended path is clear.
  Use caution, just as you would when backing up any vehicle.
- When using the parking assist mode and parallel parking assist mode
  - When backing up, be sure to check your surroundings and behind the vehicle for safety, and back up slowly, depressing the brake pedal to control vehicle speed.
  - If you seem likely to hit nearby vehicles, obstacles or people, depress the brake pedal to stop the vehicle, and then disable the system by touching “X” on the screen.
  - If there is a problem, stop the vehicle and disable the system by touching “X” on the screen.
  - Keep clothing such as neckties, scarves and long sleeves away from the steering wheel, as they may become entangled. Also, keep children away from the steering wheel.
  - If you have long fingernails, be careful not to injure yourself when the steering wheel moves.

CAUTION

How to use the camera

- Never back up while looking only at the screen. The image on the screen is different from actual conditions. Depicted distances between objects and flat surfaces will differ from actual distances. If you back up while looking only at the screen, you may hit a vehicle, a person or an object. When backing up, be sure to check behind and all around the vehicle visually and with mirrors before proceeding.
- If the back of the vehicle is hit, the position and mounting angle of the camera may change. Be sure to have the camera's position and mounting angle checked by your Lexus dealer.
- If the camera is subjected to a collision, or the camera orientation confirmation lines are not in line with the bumper, it is likely that the camera position or angle of installation has become crooked. Contact your Lexus dealer.
- Use your own eyes to confirm the vehicle's surroundings, as the displayed image may become faint or dark, and moving images will be distorted, or not entirely visible when the outside temperature is low. When backing up, be sure to check behind and all around the vehicle visually and with mirror before proceeding.
- Do not use the system when the trunk is not completely closed.
- If the image may be hard to see due to dirt, direct sunlight, shadow or snow on the camera lens.
- If the camera lens becomes dirty, it cannot transmit a clear image. If water droplets, snow, or mud adhere to the lens, rinse with water and wipe with a soft cloth. If the lens is extremely dirty, wash it with a mild cleanser and rinse.
- If you scrape the camera cover, or scrub it with a hard brush or an abrasive agent, you may scratch the cover, leading to poor picture quality.
- Do not allow organic solvent, car wax, window cleaner or glass coat to adhere to the camera. If this happens, wipe it off as soon as possible.
- As the camera has a water proof construction, do not detach, disassemble or modify it. This may cause incorrect operation.

CAUTION

- If the temperature changes rapidly, such as when hot water is poured on the vehicle in cold weather, the system may not operate normally.
- When the camera is used under fluorescent lights, sodium lights, or mercury lights, the lights and the illuminated areas may appear to flicker.
- When washing the vehicle, do not apply intensive bursts of water to the camera or camera area. Doing so may result in the camera malfunctioning.

Conditions which may affect the sensor

- Do not attach any accessories within the detection range of the sensors.
- A sensor may not operate properly in the following situations:
  - There is ice, snow or mud on the sensor. (When it is removed, the normal operation will return.)
  - The sensor is frozen. (When the sensor warms up, it will return to normal.) At low temperatures in particular, sensors that are frozen may not detect a parked vehicle.
  - When the vehicle is tilted.
  - In extreme hot or cold weather.
  - When driving on bumpy roads, slopes, gravelled roads or grass.
  - Devices issuing ultrasonic waves are operated around your vehicle, such as a horn from another vehicle, motorcycle engine, air braking sound from heavy-duty vehicles.
  - When rain or water is splashed over the vehicle.
  - When a radio antenna or fender pole is mounted on your vehicle.
  - The sensor approaches too close to a parked vehicle.

CAUTION

n Conditions which may affect the system

l If the temperature changes rapidly, such as when hot water is poured on the vehicle in cold weather, the system may not operate normally.

l Do not use the system in the following conditions:

- Outside of parking areas
- In unprepared parking area such as gravel or sand
- On slippery or icy roads, or in snow
- When using tire chains or emergency tires.
- On roads that are not flat or straight, such as curves or slopes.
- If the asphalt is melted due to harsh sunlight
- If there are a large number of vehicles or pedestrians passing
- In areas unsuitable for parking (overly small parking space, cliff etc.)

l Tire conditions

- The tires are extremely worn, or the tire inflation pressure is low
- Tires have received a strong impact, such as bumping against a curb, resulting in improper wheel alignment
- Do not use tires other than those installed by the manufacturer, as the system may not function correctly. Furthermore, if you change the tires, there may be errors in the positions of the lines and frames displayed on the screen. If you wish to change your tires, contact your Lexus dealer.

NOTICE

- **When using the parallel parking assist mode**
  - Be sure to stop the vehicle parallel to the road or shoulder. If the vehicle is not parallel, the assist location will be very near the shoulder. If it looks like the vehicle will hit or mount the shoulder, depress the brake pedal to stop the vehicle, and touch “X” on the screen to deactivate the system.
  - Always check that there are no obstacles in the green frame or between your vehicle and the parking space, and that the warning flag and extended green line do not overlap any parked vehicles or walls.
  - If there are obstacles in the green frame or between your vehicle and the parking space, or the warning flag or extended green line overlaps a parked vehicle or wall, there is a danger of collision. In this case, do not use the parallel parking assist mode. The same applies if the green frame overlaps the shoulder.
  - The warning flag is only a guide. Be sure to directly check your surroundings and behind the vehicle for safety, and back up carefully.
  - If the road surface has level variations or a gradient between the starting position and target parking position, it will not be possible to correctly set the location, which may cause the parking position to be misaligned or crooked. In this case, do not use the parallel parking assist mode.
  - When the vehicle in front of the empty space is parked on the shoulder or is not parallel with the road, parallel parking assist mode cannot be used.
  - If the parked vehicle is narrow, or parked close to the shoulder, the assisted parking position may be quite close to the shoulder. If the vehicle seems likely to hit or mount the shoulder, depress the brake pedal to stop the vehicle, and disable the system by touching “X”.

NOTICE

- **When using the parking assist mode (perpendicular parking)**
  - Always check that there are no obstacles in the green frame or between your vehicle and the parking space, and that the warning flag does not overlap any parked vehicles or walls.
  - If there are obstacles in the green frame or between your vehicle and the parking space, or the warning flag overlaps a parked vehicle or wall, there is a danger of collision. In this case, do not use the parking assist mode.
  - The warning flag is only a guide. Be sure to directly check your surroundings and behind the vehicle for safety, and back up carefully.
  - If the road surface has level variations or a gradient between the starting position and target parking position, it will not be possible to correctly set the location, which may cause the parking position to be misaligned or crooked. In this case, do not use the parking assist mode.
  - If the red area which denotes an area unsuitable for parking overlaps with the lines of the parking space, you will be unable to park, as the parking space is judged as being an area unsuitable for parking. Progress to a position where the parking space lines do not overlap with such an area.

Driving assist systems

To help enhance driving safety and performance, the following systems operate automatically in response to various driving situations. Be aware, however, that these systems are supplementary and should not be relied upon too heavily when operating the vehicle.

ABS (Anti-lock Brake System)

Helps to prevent wheel lock when the brakes are applied suddenly, or if the brakes are applied while driving on a slippery road surface

Brake assist

Generates an increased level of braking force after the brake pedal is depressed, when the system detects a panic stop situation

VSC (Vehicle Stability Control)

Helps the driver to control skidding when swerving suddenly or turning on slippery road surfaces

TRAC (Traction Control)

Maintains drive power and prevents any of the drive wheels from spinning when starting the vehicle or accelerating on slippery roads

Hill-start assist control

Prevents the vehicle from rolling backward when starting on an incline or slippery slope

EPS (Electric Power Steering)

Employs an electric motor to reduce the amount of effort needed to turn the steering wheel

VGRS (Variable Gear Ratio Steering)

Adjusts the wheel turning angle in accordance with the vehicle speed and steering wheel movement

Active stabilizer suspension system (if equipped)

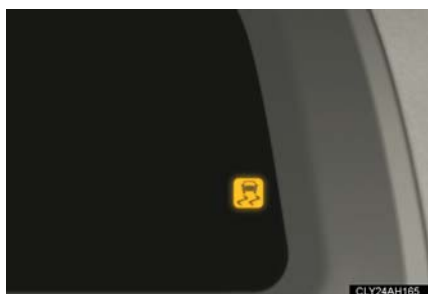
Reduces sway when cornering according to steering wheel movement and the selected suspension damping mode, in order to maintain a stable vehicle posture

- **VDIM (Vehicle Dynamics Integrated Management)**

  Provides integrated control of the ABS, brake assist, TRAC, VSC, hill-start assist control, EPS, and VGRS systems
  Maintains vehicle stability when swerving on slippery road surfaces by controlling the brakes and hybrid system output, steering assist, and steering ratio

- **Pre-Collision System (if equipped)**

  →P. 308

When the VSC/TRAC/hill-start assist control systems are operating

If the vehicle is in danger of slipping, rolling backward when starting on an incline, or any of the drive wheels spin, the indicator flashes to indicate that the VSC/TRAC/hill-start assist control systems have been engaged.

A buzzer (intermittent) sounds to indicate that VSC is operating.

The stop lights and high mounted stoplight turn on when the hill-start assist control system is operating.

The slip indicator light flashes as well when ABS is operating.

Disabling TRAC and/or VSC

If the vehicle gets stuck in fresh snow or mud, TRAC and VSC may reduce power from the hybrid system to the wheels. You may need to turn the system off to enable you to rock the vehicle in order to free it.

■ Turning off TRAC

Quickly press and release the switch to turn off TRAC.

A message will be displayed on the multi-information display showing that TRAC has been disabled.

Press the switch again to turn the system back on.

■ Turning off TRAC and VSC

Press and hold the switch for more than 3 seconds while the vehicle is stopped to turn off TRAC and VSC.

The VSC off indicator light will come on, and a message will be displayed on the multi-information display showing that TRAC has been disabled.

Press the switch again to turn the system back on.

- **Automatic reactivation of TRAC and VSC**

  Turning the "POWER" switch OFF after turning off the TRAC and VSC systems will automatically re-enable them.

- **Automatic TRAC reactivation**

  If only the TRAC system is turned off, the TRAC system will turn on when vehicle speed increases.

- **Automatic TRAC/VSC reactivation**

  If the TRAC/VSC systems are turned off, the systems will not turn on even when vehicle speed increases.

- **Sounds and vibrations caused by the ABS, brake assist, VSC, TRAC, hill-start assist control and VGRS systems**

  - A sound may be heard from the engine compartment when the hybrid system is started or just after the vehicle begins to move. This sound does not indicate that a malfunction has occurred in any of these systems.
  - Any of the following conditions may occur when the above systems are operating. None of these indicates that a malfunction has occurred.
    - Vibrations may be felt through the vehicle body and steering.
    - A motor sound may be heard after the vehicle comes to a stop.
  - The steering wheel may be moved slightly or a sound may be heard when the hybrid system is started or stopped. None of these indicate that a malfunction has occurred.

- **Hill-start assist control is operational when**

  - The shift lever is in the "D" or "S" position.
  - The brake pedal is not depressed.

- **EPS operation sound**

  When the steering wheel operates, a motor sound (whirring sound) may be heard. This does not indicate a malfunction.

n **Conditions affecting VGRS operations**

In the following situations, the center position of the steering wheel may change. However, the position will return to normal after the conditions are improved.

- When the steering wheel has been operated quickly or operated for an extended period of time while the vehicle is stopped or is moving very slowly
- When the steering wheel has been held fully to the left or right
- When the 12-volt battery is low or the voltage temporarily drops
- After the hybrid system is started at lower than -22°F (-30°C)

n **Reduced effectiveness of EPS**

The effectiveness of EPS is reduced to prevent the system from overheating when there is frequent steering input over an extended period of time. The steering wheel may feel heavy as a result. Should this occur, refrain from excessive steering input or stop the vehicle and turn the hybrid system off. The system should return to normal within 10 minutes.

n **If the slip indicator comes on**

It may indicate a malfunction in the VSC, TRAC and hill start assist control function. (→P. 499)

CAUTION

- **The ABS does not operate effectively when**
  - The limits of tire gripping performance have been exceeded.
  - The vehicle hydroplanes while driving at high speed on a wet or slick road.
- **Stopping distance when the ABS is operating will exceed that of normal conditions**

  The ABS is not designed to shorten the vehicle's stopping distance. Always maintain a safe distance from the vehicle in front of you in the following situations:
  - When driving on dirt, gravel or snow-covered roads
  - When driving with tire chains
  - When driving over bumps in the road
  - When driving over roads with potholes or roads with uneven roads
- **TRAC may not operate effectively when**

  Directional control and power may not be achievable while driving on slippery road surfaces, even if the TRAC system is operating.
  Do not drive the vehicle in conditions where stability and power may be lost.
- **If hill-start assist control does not operate effectively**

  Do not overly rely on the hill-start assist control. The hill-start assist control may not operate effectively on steep inclines and roads covered in ice.

CAUTION

- **When the VSC is activated**

  The slip indicator light flashes and a warning buzzer sounds. Always drive carefully. Reckless driving may cause an accident. Exercise particular care when the indicator light flashes and a buzzer sounds.

- **When TRAC and VSC are off**

  Be especially careful and drive at a speed appropriate to the road conditions. As these are systems to ensure vehicle stability and driving force, do not turn off TRAC and VSC unless necessary.

- **Replacing tires**

  Make sure that all tires are of the same size, brand, tread pattern and total load capacity. In addition, make sure that the tires are inflated to the recommended tire pressure level.

  The ABS and VSC systems will not function correctly if different tires are fitted on the vehicle.
  Contact your Lexus dealer for further information when replacing tires or wheels.

- **Handling of tires and suspension**

  Using tires with any kind of problem or modifying the suspension will affect the driving assist systems, and may cause the system to malfunction.

Pre-Collision System*

When the radar sensor detects possibility of a frontal collision, the pre-collision system such as the brakes and seat belts are automatically engaged to lessen impact and injuries to occupants as well as vehicle damage.

n Pre-collision seat belts

If the pre-collision sensor detects that a collision is unavoidable, the pre-collision system will retract the seat belt before the collision occurs.
The same will happen if the driver makes an emergency braking or loses control of the vehicle. (→P. 109)

However, the system will not operate in the event of skidding when the VSC system is disabled.

n Pre-collision brake assist

When there is a high possibility of a frontal collision, the system applies greater braking force in relation to how strongly the brake pedal is depressed.

n Pre-collision braking

When there is a high possibility of a frontal collision, the system warns the driver using a warning light, warning display and buzzer. If the system determines that a collision is unavoidable, the brakes are automatically applied to help reduce the collision speed. Pre-collision braking function can be turned on and off using the pre-collision braking off switch.
(→P. 309)

n Suspension control

When there is a high possibility of a frontal collision, the operation of suspension control helps prevent the front of the vehicle from dropping when the brakes are applied suddenly.

*: If equipped

■ **Driver monitor system (if equipped)**

When the system determines that there is a possibility of a collision, and that the driver is not facing forward, PCS warnings are given in advance to warn the driver. If the situation does not improve, pre-collision alert braking will be applied. (→P. 311)

■ **Steering gear control (VGRS) (with driver monitor system)**

When the system determines that a collision is unavoidable, the steering gear ratio is changed to help improve the response to steering input.

■ **Pre-collision alert braking (with driver monitor system)**

When the system determines that the driver is not facing forward, and that the possibility of a collision persists, the brakes will be applied briefly to give the driver a sensory warning and encourage them to take preventive measures. Pre-collision alert braking can also be disabled using the pre-collision braking off switch.

Disabling pre-collision braking

1 Pre-collision braking and pre-collision alert braking (if equipped) disabled

2 Pre-collision braking and pre-collision alert braking (if equipped) enabled

The "PCS" warning light flashes when pre-collision braking is disabled.

Radar sensor

Detects vehicles or other obstacles on or near the road ahead and determines whether a collision is imminent based on the position, speed, and heading of the obstacles

Camera sensors (with driver monitor system)

Detect pedestrians and other three-dimensional objects on or near the road ahead together with the radar sensor while the vehicle is moving. When the headlights are on, near-infrared rays are projected to ensure proper detection performance in the night time.

1 Camera sensors

2 Near-infrared ray transmitters

Driver monitor sensor (with driver monitor system)

Detects the direction the driver is facing. The system determines whether the driver is facing forward.

Obstacles not detected

The sensor cannot detect plastic obstacles such as pylons. There may also be occasions when the radar sensor cannot detect pedestrians, animals, bicycles, motorcycles, trees, or snowdrifts.

A camera sensor cannot detect obstacles in the following situations:

- A camera sensor is directly receiving intense light, such as sunlight.
- Visibility is poor because of bad weather or other reasons.
- The sensor temperature is extremely high.

The pre-collision system is operational when

- Pre-collision seat belts:

▶ Operating conditions A

- Vehicle speed is above 4 mph (5 km/h).
- The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 19 mph (30 km/h).
- The front occupants are wearing a seat belt.

▶ Operating conditions B

- Vehicle speed exceeds 19 mph (30 km/h).
- The system detects sudden braking or skidding.
- The front occupants are wearing a seat belt.

- Pre-collision brake assist:
  - Vehicle speed is above 19 mph (30 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 19 mph (30 km/h).
  - The brake pedal is depressed.
- Pre-collision braking:
  - The pre-collision braking off switch is not pressed.
  - Vehicle speed is above 10 mph (15 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed your vehicle is approaching an obstacle is greater than 13 mph (20 km/h).
- Suspension control:
  - Vehicle speed is above 4 mph (5 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 19 mph (30 km/h).
- Steering gear control (VGRS) (with driver monitor system):
  - Vehicle speed is above 19 mph (30 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 19 mph (30 km/h).
- Pre-collision alert braking (with driver monitor system):
  - The pre-collision braking off switch is not pressed.
  - The system determines that the driver is not facing forward.
  - Vehicle speed is above 10 mph (15 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 13 mph (20 km/h).
  - The steering is not being turned.

■ **Conditions that may trigger the system even if there is no possibility of collision**

- When there is an object by the roadside at the entrance to a curve
- When passing an oncoming vehicle on a curve
- When driving over a narrow iron bridge
- When there is a metal object on the road surface
- When there is a metal plate in the road in front of the vehicle on a downhill slope
- When there is a metal object such as a sign board in front of the vehicle on an uphill slope
- When driving on an uneven road surface
- When passing an oncoming vehicle on a left-turn
- When your vehicle rapidly closes on the vehicle in front
- When your vehicle is skidding with the VSC system off
- When a grade separation/interchange, sign, billboard, or other structure appears to be directly in the vehicle's line of travel.
- When climbing a steep hill causes an overhead billboard or other metallic structure to appear directly in the vehicle's line of travel.
- When an extreme change in vehicle height occurs
- When the axis of the radar is out of adjustment
- When passing through certain toll gates

When the system is activated in the situations described above, there is also a possibility that the seat belts will retract quickly and the brakes will be applied with a force greater than normal. When the seat belt is locked in the retracted position, stop the vehicle in a safe place, release the seat belt and refasten it.

■ **Situations in which the pre-collision system does not function properly**

The system may not function effectively in situations such as the following:

- On roads with sharp bends or uneven surfaces
- On slippery roads such as those covered with ice or snow
- If a vehicle suddenly moves in front of your vehicle, such as at an intersection
- If a vehicle suddenly cuts in front of your vehicle, such as when overtaking
- In inclement weather such as heavy rain, fog, snow or sand storms
- When your vehicle is skidding with the VSC system off

■ **When there is a malfunction in the system**

Warning light will flash and/or warning messages will turn on. (→P. 498, 508)

Certification

▶ For vehicles sold in the U.S.A.

FCC ID: HYQDNMWR004

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiofrequency radiation exposure Information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance of 20 cm between the radiator (antenna) and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

▶ For vehicles sold in Canada

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CAUTION

Handling the radar sensor

Observe the following to ensure the pre-collision system can function effectively:

- Keep the sensor and front grille clean at all times.
  Clean the sensor and front grille with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by your Lexus dealer.

CAUTION

- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille or surrounding area.
- Do not modify or paint the sensor and grille.

Handling the driver monitor sensor (with driver monitor system)

Observe the following to ensure the driver monitor sensor can function effectively.

Failure to do so may result in a malfunction or may prevent the system from correctly determining the direction the driver is facing.

- Do not disassemble, damage, lift or pull on the sensor.
- Do not touch the sensor while driving.
- Do not wet or spill water on the sensor.
- Do not drop anything on or allow anything to hit against the sensor. Do not subject the sensor to an impact.
- Make sure that there are no scratches, dirt or stickers on the side of the sensor that faces the driver.
- Do not place any objects in front of the side of the sensor that faces the driver or cover the sensor.

Handling the camera sensors (with driver monitor system)

Observe the following to ensure that the PCS functions correctly:

- Keep the windshield clean at all times.
  PCS effectiveness may be reduced due to the presence of raindrops, condensation, ice or snow on the windshield.
- Do not change the installation position of a camera sensor, or remove and reinstall it. The direction of a camera sensor is precisely adjusted.
- When it is cold, using the heater with air blowing to the feet may allow the upper part of the windshield to fog up. This will have a negative effect on the images. In such a case, use the windshield defogger to provide warm, dry air to the windshield.
- Do not place anything on the dashboard.
  Images reflected on the windshield may reduce the effectiveness of a camera sensor.
- Do not attach a sticker or other items to the windshield near a camera sensor.

CAUTION

- **Determining the direction the driver is facing (with driver monitor system)**

  The driver monitor function does not operate when the vehicle is stopped.
  The direction the driver is facing may not be determined correctly if any of the following conditions exist:

  - There is an object between the driver monitor sensor and the driver's face, such as when the sensor is blocked.
  - A part of the driver's face is covered.
  - The sensor or the driver's face is exposed to intense light such as sunlight.
  - The driving posture is improper.

- **Headlights (with driver monitor system)**

  The near-infrared ray transmitter projects strong energy that is not visible. Although the transmitter normally turns off when the vehicle is stopped, never look into the headlights for your safety.

- **Limitations of the pre-collision system**

  Do not rely on the pre-collision system. Always drive safely, taking care to observe your surroundings and checking for any obstacles or other road hazards.

- **Cautions regarding the assist contents of the system**

  By means of alarms and brake control, the pre-collision system is intended to assist the driver in avoiding collisions through the process of LOOK-JUDGE-ACT. There are limits to the degree of assistance the system can provide, so please keep in mind the following important points.

  - Assisting the driver in watching the road
    The pre-collision system is only able to detect obstacles directly in front of the vehicle, and only within a limited range. It is not a mechanism that allows careless or inattentive driving, and it is not a system that can assist the driver in low-visibility conditions. It is still necessary for the driver to pay close attention to the vehicle's surroundings.
  - Assisting the driver in making correct judgment
    When attempting to estimate the likelihood of a collision, the only data available to the pre-collision system is that from obstacles it has detected directly in front of the vehicle. Therefore, it is absolutely necessary for the driver to remain vigilant and to determine whether or not there is a possibility of collision in any given situation.

CAUTION

- Assisting the driver in taking action
  The pre-collision system's braking assist feature is designed to help reduce the severity of a collision, and so only acts when the system has judged that a collision is unavoidable. This system by itself is not capable of automatically avoiding a collision or bringing the vehicle to a stop safely. For this reason, when encountering a dangerous situation the driver must take direct and immediate action in order to ensure the safety of all involved.

NOTICE

■ **Camera sensors (with driver monitor system)**

Observe the following to ensure that the PCS functions correctly:

- Do not subject a camera sensor to a strong impact or force, and do not disassemble a camera sensor.
- Do not scratch camera lens, or let it get dirty.

■ **Headlights (with driver monitor system)**

Observe the following to ensure proper near-infrared ray projection:

- Keep the headlights clean at all times.
- The detection performance may deteriorate if the high beams are misaligned or the high beams are inoperative.

■ **Precautions for cleaning the driver monitor sensor (with driver monitor system)**

- Gently wipe the sensor with a soft cloth to prevent damage.
- Wipe any excess dirt with a cloth dampened with neutral detergent, all liquids having been wringed out of the cloth. After that, wipe again with a dry cloth.
- Do not use benzene, thinner, glass cleaners, wax, etc.